Evaluation of

A Socially-Centric Blended Learning Model for At Risk Youths in an Urban Institution

Project funded by
Next Generation Learning Challenges, Educause

Implemented at
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submitted February 25, 2013

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Executive Summary

This study points to the potential and challenges of implementing a blended social learning model in large introduction to science classes. Findings are inconsistent across the three cases – a biology class, a chemistry class, and a small writing class. Classroom Salon provided instructors with ways to monitor student use of texts, to identify unanticipated conceptual problems and to craft their lectures to address these issues. Management of a large volume of notations to support meaningful peer to peer interaction in large classes and meaningful individualized intervention by instructors and TAs posed challenges in this context that do not arise in small discussion oriented classes.

1) Implementation of the Socially-Centric Blended Learning Model for At Risk Youths in an Urban Institution Classroom Salon (CLS) field trial was modified to fit the context of the University of Wisconsin, Milwaukie. Emphasis shifted from testing the effect of social media to create a supportive community for struggling students to a focus on reading comprehension and informing instructors' lectures to meet student needs.

2) *Analytic design*. Two large introduction to science (Chemistry and Biology) classes implemented CLS. Student use of CLS was described qualitatively by the instructors and a CLS engagement score was derived from patterns of student use. Multivariate analysis predicted Classroom Salon engagement and tested the hypotheses that CLS improved class participation and that CLS engagement improved points earned for content knowledge. Logistic regression predicted the effect of CLS on course pass rates. High school GPA was used as a control for student's prior ability and to flag possible students at risk. Most demographic predictors were not significant and were dropped from models. The 2012 treatment groups were analyzed against 2011 control groups (same courses taught by the same teachers) to test the impact of introducing CLS.

3) *Summary of findings.*

The effect of Classroom Salon on outcomes is different for the Chemistry and Biology courses.

1. Do individual characteristics predict differences in Classroom Salon engagement?

    - Demographic characteristics are not correlated with Classroom Salon engagement.
    - The AOC indicator (institutional flag for academically struggling students) is not correlated with Classroom Salon engagement
    - In the Biology class, students from the high school GPA top quartile (of the total sample) use Classroom Salon more than others. This suggests that students who know how to be "good students" are more compliant with Classroom Salon engagement.

2. Does Classroom Salon engagement increase class participation in the course?

- Classroom Salon (CLS) use is significantly related to classroom participation, although in different directions for the two courses. Age, gender, and high school GPA are not significant predictors of participation.
- Classroom Salon is *negatively* related to attendance in Chemistry and *positively* related to engagement in lecture in Biology. This may be partially explained by differences in how participation is measured. There may also be unidentified explanations, however, as participation is not normally distributed and this model is not very strong

3. Does Classroom Salon engagement increase learning of course content?

- The relationship between performance and Classroom Salon use differs between the two courses.
- In the Chemistry course, Classroom Salon use *does not* predict points for course work as an indicator of learning.
- In the Chemistry course, Classroom Salon use *does not* mediate the effect of prior ability on grade outcomes.
- In Biology, Classroom Salon use predicts the points earned by students for performance on course work and adds .04 explanation of variance to the overall model.
- High school GPA is not a significant predictor of points in the Biology class.
- CLS, as implemented in the Biology class, contributes more to quiz scores than to assessments requiring high order thinking.

4. Does use of Classroom Salon increase pass rates?

- Classroom Salon does not predict passing the Chemistry course,
- Classroom Salon strongly predicts passing the Biology course.
- Classroom Salon increases the likelihood of whites passing compared to non-whites in the Biology course. While this may be an unrelated and spurious finding since whites and non-whites do not differ in their use of Classroom Salon, differences by race in quiz assessments may affect this outcome.

5. Does Classroom Salon improve persistence as indicated by enrollment in the semester following the course.

- The effect of Classroom Salon on persistence is minimal

Study implementation of Classroom Salon

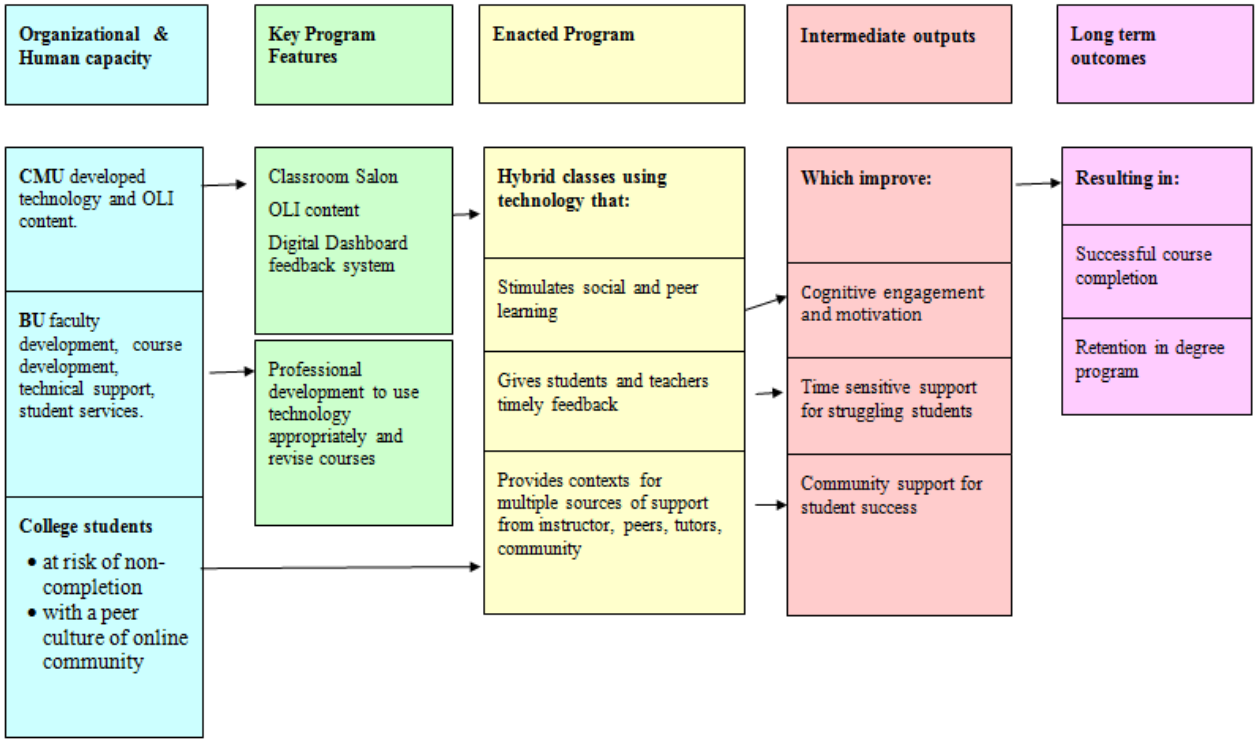
Classroom Salon (CLS) is a web based application that supports group reading, annotation and asynchronous discussion tied directly to a text. The platform has been implemented and developed with over 6000 users through Carnegie Mellon University. The intention of this project was to research implementation of this tool to create environments that would support successful completion of gateway courses.

The original "theory of action" for this project is that "The CLS software combined with a flexible blended learning model are designed to improve student motivation and engagement through engaging social processes and continuous formative feedback. Improved engagement and motivation, in turn, will result in improved persistence and more successful completion of gateway courses. The interaction design of Classroom Salon promotes a social networking protocol that is familiar even to high-risk students. Previous research from modern social networks suggest that students are motivated and engaged when they are aware of the activities of their fellow peers and feel connected to them empathically as well as through technology. With ability to create private study rooms and mentor rooms in a virtual environment, we hypothesize that Classroom Salon can we hypothesize, help build a community of empathic learners who are more willing than control groups to take on responsibility for the success of each individual learner. Turning classrooms into involved communities of practice can have measurable impact addressing retention problems in gateway courses."

Classroom Salon was introduced to three introductory level classes at UWM -- writing, Chemistry and Biology—with three different instructors who each used the technology differently. Implementation of Classroom Salon was piloted in the spring term 2012. The PIs, instructors and evaluator debriefed the pilot, made improvements to the application, and revised strategies for classroom use for the fall 2012 trial, which is reported here.

Figure one outlines the original project implementation plan. Commentary below discusses how those plans changed and why.

Figure 1: Original logic model



Blue column: The program was transferred from University of Baltimore to the UWM because of PI transfer. This context changed the identification of "at risk" students. Instead of blended courses, the courses that became involved with the project were primarily large science classes that were primarily face to face accessing online supplemental resources. The original intention of integrating Open Learning Institute resources was dropped because their available curriculum did not match that of the proposed courses.

Green column: Classroom Salon functionalities continued to be developed as the project generated recommendations for user experience. The instructors received training on the technology and met with the PI to workshop problems. Instructors were involved in the design of the research to identify CLS user data and classroom outcome data that was most valid for their objectives. After the spring pilot, the entire team met to debrief and revise the implementation and research plans for the experimental term in fall.

Yellow Column: The project learned from implementation that some of the hypothetical benefits of CLS could not be tested in this context. Large classes focused on transmission of declarative knowledge are different learning environments than student-centered classes that focus on

interpretive knowledge and community support such as that hypothesized in the CLS proposal drawing on models of social media and collective intelligence. Issues that arose are the sheer volume of comments generated by a large class and the relative low quality of those comments. These two factors became disincentives for meaningful interaction among students for peer-to peer online interaction as envisioned.

The CLS project design anticipated a "large and supportive community" that would scaffold and affectively support struggling students. "While all students benefit from collective intelligence compiled and presented by CLS, we hypothesize that CLS may perhaps have the highest impact on students who are high risk because of its ability to not only present collective intelligence, but also its ability to personalize instruction to specific individuals with minimal overhead." The support for struggling students is institutionalized on this campus with tutors, supplemental instructors and cohort models that are in place regardless of the classroom salon intervention. The volume and quality of annotations, along with limited ability to access analyzable data from the system in a timely manner limited the instructional staff's ability to identify struggling students through their use of CLS and intervene on their behalf.

Orange column: Intermediate outputs of cognitive engagement, motivation, and time sensitive support where achieved through mechanisms different from conceived in column two. Publically and transparently notating the text, along with justification for their notation, probably provided cognitive reinforcement of the reading materials, especially for students with these prior skills. Instructors used dashboard tools to identify content that students had difficulty with and used this meta analysis to inform their lectures. This strategy indirectly helped struggling students because faculty were able to "see into their heads" and address problems for the whole class.

Pink column: Long-term outcomes are addressed in the analysis below.

Checking logic model assumptions with student survey

Some findings from the spring pilot student survey that were not replicated in the fall are, however, relevant to this summative analysis. Although 74% of the students surveyed indicated that they use social media every day, this practice did not spill into the web 2.0 design of Classroom Salon. Use of social media outside of school is not associated with engagement in the CLS. Another hypothesis is the CLS is a learning tool that, like other student behaviors known to support positive learning outcomes, would best implemented by "good" students more than by struggling students. The spring pilot survey also assessed student study skills with an adaptation of the "readiness for online learning" self-diagnostic instrument used by the university. Self assessed time management skills was the best predictor of students' CLS use in the project pilot.

Data from the fall student survey suggest that student behavior does not support the hypothesis of "group intelligence." Most did not benefit from other students, although about a third said other student's notations helped their thinking. Very few used the platform to interact with other students.

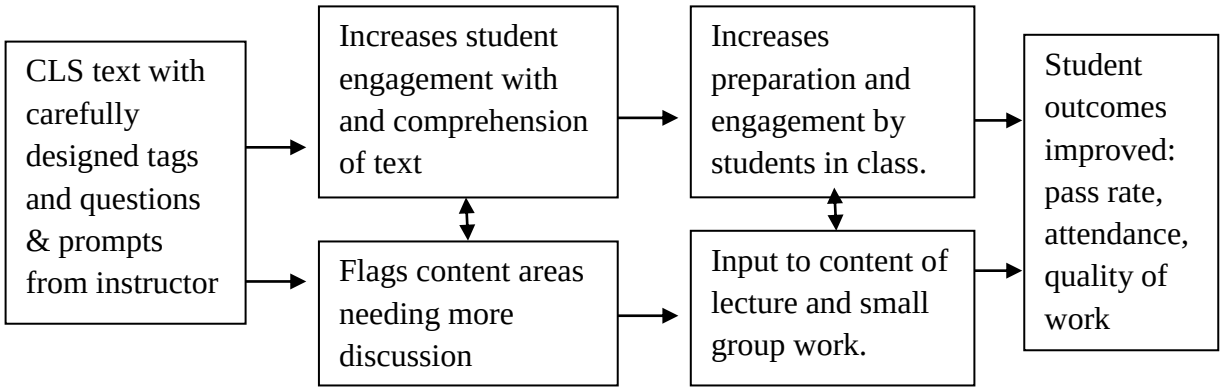
- 40% didn't read other students comments
- 21% said other students' comments did not help their thinking.
- 35% said other students helped their thinking
- 4% said they discussed the text online with other students

These three preliminary findings, along with the instructor implementation narratives in Appendix C, suggest that the mechanisms through which CLS was hypothesized to support students at risk were not implemented as anticipated.

Revised model and implementation

As discussed in the instructor implementation reports below, implementation of Classroom Salon in the environment of large classes did not reach the level of community and interaction among students implied by the terms "social media" and "broad and supportive community." Therefore, the research questions were modified to fit a theory of change that suggests that student engagement with the text mediated by Classroom Salon increases their comprehension. Student notations also inform instructors' in-class presentations of material and direct special attention from TAs to individual students. Therefore, targeted coverage of course material increases classroom engagement, points for course work and pass rates. This revised model is illustrated in Figure two below.

Figure 2: Implemented logic model



The original hypotheses posed for this study were:

1. Social media used to create a blended learning model will increase student motivation and engagement with the subjects they are studying. Dependant variable: participation in class.
2. Providing at-risk students with a broad and supportive community will improve their academic performance. Dependant variable: Course points for work.
3. Providing at-risk students with a broad and supportive community will improve completion rates. Dependant variable: Course completion (C or above).

The revised research questions are:

1. Do individual characteristics predict differences in Classroom Salon engagement?
2. Does Classroom Salon engagement increase class participation in the course?
3. Does Classroom Salon engagement increase learning of course content?
4. Does Classroom Salon engagement increase pass rates?
5. Does Classroom Salon offer advantages to improve performance of at risk students?

Instructor implementation of Classroom Salon

Descriptions of the classes and implementation of Classroom Salon written by the participating instructors are in Appendix C.

Classroom Salon was implemented in three lower level undergraduate courses on the campus at the University of Wisconsin, Milwaukie. The two science classes, Chemistry and Biology, combined large lecture sessions of over 200 students with smaller discussion groups facilitated by Teaching Assistants. Students could choose between hard copy text books, electronic books and sections of the required texts were uploaded into CLS by the instructors. Students were asked to read and annotate these sections using tags from a pull down menu and respond to open ended questions posed by the instructor. Both science instructors worked with TAs to evaluate and respond to student annotations. They both used CLS tools to identify parts of the text and problems students had with comprehension to address in their lectures.

The instructors piloted strategies for prompting students in the Spring Classroom Salon pilot and revised their approaches for the fall intervention. Revisions were aimed at improving the quality of response from rote, meaningless tagging to annotations that are more thoughtful. For example, the Biology instructor changed from a pull down menu of 5 tag choices to a prompt asking, “Why I tagged this.” The Chemistry instructor refined her questions to prompt deeper thinking beyond identifying facts. Configuration of the Salons, or group discussion, also changed in the Chemistry class after the spring pilot. Initially the instructor set separate Salons for each of eleven discussion groups in the class expecting that the small group discussions would support more discourse. However, students were reluctant to make annotations in this intimate environment. In the fall intervention, all the Chemistry students participated in one Salon, which improved engagement.

Both science instructors assigned participation points for use of Classroom Salon to encourage engagement. One challenge was how to process the sheer volume of comments for large classes, even with the dashboard features offered in CLS and the support of TAs specifically assigned to this task. In the fall intervention, the Biology instructor devised a scoring system that weighed more thoughtful comments (as estimated by number of words) higher than single word annotations. The Chemistry students were assigned points for any annotation. During the lecture session, the Biology instructor noted on his slides which items he was addressing from the CLS notations. There was, however, not a direct feedback loop to the students about how CLS helped them learn or improved their performance.

The science instructors' goals for CLS use in their classes were very similar to each other. They hoped it would increase students use of the textbooks "as a basic resource for information, links, and supplements" and to be more prepared for lecture. They anticipated using student's annotations to align their lecture more closely to student needs. In addition, they hoped for more communication between students without instructor intervention.

The third course, English 101, is a discussion-based course of 23 students for which students prepare and revise a portfolio of essays. Students were required to read three essays in Classroom Salon and respond in Classroom Salon with at least two paragraphs addressing questions posed by the instructor. Students were also required to respond to the contributions of other students. The instructor also used the Salon to facilitate group analysis of particularly difficult passages. One of the instructor's goals for using CLS in his class was to "use student responses online to better facilitate face-to-face discussions. He was able to monitor students' reading practices and identify questions and problem areas. He also wanted students to interact with each other over the text. The instructor felt these goals were met in the fall intervention. "The primary benefit of the tool for my course is the efficient identification of student responses to specific passages within texts. I could ask students to produce written responses that would identify places in the text where they were confused or had interest, but Classroom Salon allowed me to see, at a glance, a more holistic view of the students' responses to better prepare me for in-class discussions. For their part, students felt that seeing how others responded helped they better understand the nuances of the texts."

Analysis of Classroom Salon engagement and outcomes

Data

Data were generated first by the instructors' rosters against which informed consent permissions were noted. A Classroom Salon engagement score (CLS) for both science courses was derived from the number and word count of student responses generated by the system (as described in Appendix C, page X). Instructors recorded outcome variables of points for coursework and class participation

scores calculated independent from each other (class participation points and Classroom Salon points were subtracted from overall points for the course to generate points for course work). Letter grades were used to derive a pass rate for the course where grades C and above were coded passing based on department policy for the majors.

An indicator of Classroom Salon engagement was derived from data reported from the CLS system at the individual user level and tied by student id to both class grades and background data provided by the university.

UWM institutional data was provided for the cohort of students participating in the fall 2012 three classes and for a comparison cohort of student participating in the Chemistry and Biology courses in fall 2011. Institutional data included demographic controls for gender, race/ethnicity, first generation college student, and age. Available indicators of pre-existing ability were high school grade point average, ACT scores, and university administered math and language placement tests, and a flag for academically challenged students (AOC). High school grade point average was selected as the indicator of prior ability because it had the least amount of missing data and is correlated with all the other possible indicators of ability. The data do not include an indicator for "low income." Potential indicators of low income (race, first generation college students) were not significant correlates. Instead, this study focused on students as risk based on their academic record as indicated by their high school GPA and the AOC flag. A table of descriptive statistics is found in Appendix A

Cases were dropped as the data sources were merged. Analysis of sample bias is found in Appendix B. Exploratory propensity-scoring analysis was conducted to test whether comparability between data for the comparison group (2011 cohort) and the intervention group (2012 cohort) could be improved by selective matching. However, the two groups are nearly perfectly matched (using high school GPA as a predictor) without additional selection. However, different metrics for course points and participation were used by the three teachers, so each class is analyzed separately as an independent sample.

Findings

Do individual characteristics predict differences in Classroom Salon engagement?

- Demographic characteristics are not correlated with Classroom Salon engagement.
- The AOC indicator is not correlated with Classroom Salon engagement
- In the Biology class, students from the high school GPA top quartile (of the total sample) use Classroom Salon more than others do. This suggests that students who know how to be "good students" are more compliant with Classroom Salon engagement.

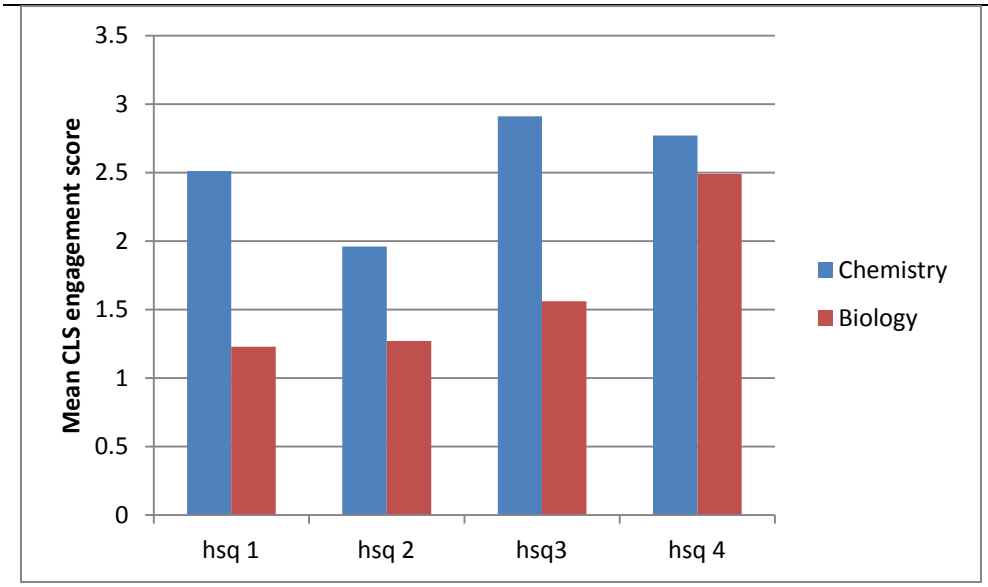
Table one illustrates that gender is the only correlate to CLS use in the Chemistry class and high school GPA is the only correlate in the Biology class.

Table 1: Correlation with Classroom Salon use Fall 2012

	Chemistry	Biology
Academically at risk (AOC)	ns	ns
Female	.31 (.00)	ns
White	ns	ns
Age	ns	ns
First generation college	ns	ns
High school GPA	ns	.26 (.00)

Figure three illustrates Classroom Salon use by high school GPA quartile of the 2012 sample. The blue bars represent the Chemistry class, in which, controlling for gender, there is no significant relationship by quartile or between the top 25% and bottom 75%. In the Biology class (red bars) comparing CLS use of the top quartile of high school GPA (mean CLS= 2.49) to the bottom 75% completely explains correlation with Classroom Salon (.35 p = .00)

Figure 3: Mean Classroom Salon score by high school GPA quartiles comparing Chemistry and Biology class



As anticipated by the correlation tables, the most parsimonious model predicting Classroom Salon use drops race, age, and first generation status. This finding suggests that students with these characteristics are equally likely to use the technology as others.

Among students that used Classroom Salon in the Chemistry class, the only predictor of Classroom Salon use is gender (Adjusted R2 = .08, F (3, 92) = 7.26 p = .00). High school GPA is not correlated with Classroom Salon use. In the Biology class, previous knowledge and student skills as indicated by high school GPA are significant predictors of Classroom Salon use, although gender is not (Adj R-squared= .06, f(2,108) =4.84, p=.01).

Table 2: Predictors of Classroom Salon engagement

	Chemistry				Biology			
	Coef.	SE	t	P>t	Coef.	SE	t	P>t
GENDER	1.13	0.26	4.35	0.00	0.38	0.27	1.41	0.16
HSGPA	0.16	0.17	0.99	0.32	0.58	0.22	2.61	0.01
_cons	1.6	0.54	2.97	0.00	-.41	.71	-.58	0.58

Does use of Classroom Salon increase participation in the course?

- Classroom Salon (CLS) use is significantly related to classroom participation, although in different directions for the two courses. Age, gender, and high school GPA are not significant predictors of participation.
- Classroom Salon is *negatively* related to attendance in Chemistry and *positively* related to engagement in lecture in Biology. This may be partially explained by differences in how participation is measured. There may also be unidentified explanations, however, as participation is not normally distributed and this model is not very strong.

Table 3 shows regression coefficients predicting participation in the Chemistry and Biology classes. The model for the Chemistry class shows that, although first generation college students have equally Classroom Salon engagement as other students, they have significantly lower class participation rates. Students with higher rates of Classroom Salon engagement also have *lower* participation rates. (Adjusted R2 = .04, F (2, 180) = 493, p = .01).

In the Biology class, Classroom Salon predicts higher student participation in the class. First generation status is weakly, but positively associated with participation in the context of Classroom Salon use (Adjusted R2 = .09, F (3, 92) = 5.83, p = .00).

Table 3: Predictors of participation								
	Chemistry class, Fall 2012				Biology class, F2012			
	Coef.	SE	t	P>t	Coef.	SE	t	P>t
FIRSTGEN	-2.88	1.47	-1.96	0.05	0.95	0.50	1.87	0.06
CLS	-0.96	0.40	-2.38	0.02	0.57	0.19	2.98	0.00
_cons	33.31	1.43	23.37	0.00	7.51	0.47	15.93	0.00

Does use of Classroom Salon increase learning of course content?

- The relationship between performance and Classroom Salon use differs between the two courses.
- In the Chemistry course, Classroom Salon use *does not* predict points for course work as an indicator of learning.
- In the Chemistry course, Classroom Salon use *does not* mediate the effect of prior ability on grade outcomes.
- In Biology, Classroom Salon use predicts the points earned by students for performance on course work and adds .04 explanation of variance to the overall model.
- High school GPA is not a significant predictor of points in the Biology class.
- CLS, as implemented in the Biology class, contributes more to quiz scores than to assessments requiring high order thinking.

Table 4: Predicting points (log) Chemistry Fall 2012 cohort only								
	Model 1: baseline Adj R-squared = 0.52				Model 2: adding Classroom Salon Adj R-squared = 0.53			
	Coef.	Std. Err.	t	P>t	Coef.	Std. Err.	t	P>t
HSGPA	-0.07	0.03	-2.63	0.01	-0.07	0.03	-2.68	0.01
PART	0.03	0.00	13.73	0.00	0.03	0.00	13.70	0.00
CLS					0.01	0.01	1.05	0.30
_cons	5.57	0.10	57.87	0.00	5.54	0.10	53.97	0.00

Table 5a: Predicting points (log) Biology Fall 2012 cohort only								
	Model 1: baseline Adj R-squared= .46				Model 2: adding Classroom Salon Adj R-squared= .50			
	Coef.	SE	t	P>t	Coef.	SE	t	P>t
HSGPA	0.08	0.06	1.42	0.16	0.05	0.06	.83	0.41

PART	0.11	0.01	8.98	0.00	0.11	0.01	8.19	0.00
CLS					0.08	0.03	3.18	0.00
_cons	2.80	0.21	13.57	0.00	2.88	0.20	14.42	0.00

Indicators of deeper learning can be uncovered by disaggregating the total points earned for Biology class into points earned for quizzes, take home assignments, and case studies. The instructor differentiates these class components as scaffolding higher order learning through the course. Compared to quizzes, take home assignments and case studies required more complex cognitive work, such as analyzing, synthesizing and applying knowledge. (The case study and take home assignments account for half of total points, quizzes and exams for one third). While race was dropped as a non-significant predictor of total points, race was added to this equation to help explain the finding (Table 7, below) that the pass rate heavily favors white students. There is no difference in CLS engagement by race (t=-.89, df= 109, p=.37) in the Biology class.

Table 5b: Predicting deeper learning Biology Fall 2012 cohort only – Quiz scores

	Model 1: baseline Adj R-squared= .30				Model 2: adding Classroom Salon Adj R-squared= .48			
	Coef.	SE	t	P>t	Coef.	SE	t	P>t
WHITE	13.51	5.41	2.49	.01	13.53	4.63	2.92	.01
HSGPA	6.54	3.96	1.65	.10	2.74	3.35	.79	.43
PART	4.01	.83	5.2	0.00	3.24	.73	4.45	0.00
CLS					8.87	1.43	6.21	0.00
_cons	2.27	12.94	.18	0.86	11.69	11.16	1.05	.30

Table 5c: Predicting deeper learning Biology Fall 2012 cohort only – Case studies

	Model 1: baseline Adj R-squared= .64				Model 2: adding Classroom Salon Adj R-squared= .69			
	Coef.	SE	t	P>t	Coef.	SE	t	P>t
WHITE	-.64	3.81	-.17	.87	-.87	3.55	-.25	.81
HSGPA	3.19	2.79	1.14	.26	1.15	2.65	.43	.66
PART	7.69	.58	13.33	.00	7.09	.56	12.71	0.00
CLS					4.50	1.09	4.11	0.00
_cons	-9.07	9.11	-1.00	.32	-4.78	8.55	-.56	.58

Here we can see that there is no difference between white and non-white students in points earned for case studies, work that involves deeper learning. Quizzes, however, significantly favor white students and explain their higher pass rates. These tables also illustrated that, while CLS contributed to learning measured by both quizzes and case studies, it explains .18 of the variance in quiz scores and only .05 of the variance in case study scores.

Does use of Classroom Salon increase pass rates?

- Classroom Salon does not predict passing the Chemistry course,
- Classroom Salon strongly predicts passing the Biology course.
- Classroom Salon increases the likelihood of whites passing compared to non-whites in the Biology course. While may be an unrelated and spurious finding since whites and non-whites do not differ in their use of Classroom Salon, Table 5b uncovers differences by race in quiz assessments that may affect this outcome.

Table 6 shows that none of the independent variables, including Classroom Salon engagement, predict passing the Chemistry course except for participation rates (students with participation rates of 0 are excluded from the model).

Table 6: Logistic regressing predicting passing the Chemistry course

					Model 2: with Classroom Salon			
	Odds Ratio	Std. Err.	z	P>z	Odds Ratio	Std. Err.	z	P>z
WHITE	1.40	.71	.65	.51	1.38	.71	.64	.53
AGE	1.17	.11	1.78	.08	1.19	.11	1.81	.07
GENDER	.71	.34	-.72	.47	.74	.37	-.59	.56
HSGPA	1.64	.69	1.18	.24	1.71	.74	1.23	.22
PART	1.24	.04	6.12	.00	1.25	0.04	6.11	.00
CLS					0.95	0.14	-0.37	.71
	Pseudo R2 = .39, LRchi2 (5) 75.94, p=.00)				Pseudo R2 = .40, LRchi2 (6) 76.07, p=.00)			

The pattern of predictors of passing the Biology course is very different from that of the Chemistry course. Participation does not predict passing at all and students are twice as likely to pass the course for each year of age. After race/ethnicity, the most significant predictor is Classroom Salon engagement. For each one point of Classroom Salon engagement, students are over 3.5 times more likely to pass. However, adding Classroom Salon to the model also increases the likelihood of white students passing compared to non-white students. As shown in Table 5b, this might be related to differences in quiz scores.

Classroom Salon adds .18 explanation of the variance in the pass rate over and above the other predictors in the model.

Table 7: Logistic regressing predicting passing the Biology course

					Model 2: with Classroom Salon			
	Odds Ratio	Std. Err.	Z	P>z	Odds Ratio	Std. Err.	Z	P>z
WHITE	13.32	10	.3.43	.00	24.02	23.12	3.26	.00
AGE	2.0	.49	2.82	.01	2.08	.60	2.52	.01
GENDER	.93	.62	-.10	.92	.66	.50	-.55	.58
HSGPA	2.23	.62	1.59	.11	1.60	.96	.79	.43
PART	1.29	0.64	.51	.61	.97	.56	-.05	.96
CLS					3.61	1.27	3.64	.00
	Pseudo R2= 0.22 LRChi2 (5) = 27.58, p =.00				Pseudo R2 =.40 LRChi2 (6) = 49.53, p =.00			

Comparison between 2011 cohort and 2012 cohort

- The overall effect of CLS on student engagement and knowledge is small to moderate.
- The intervention of Classroom Salon *does not* predict differences between the control and intervention groups in points for course work or pass rates in the Chemistry class
- The intervention of Classroom Salon *does* predict differences between the control and intervention groups in points for course work and pass rates in the Biology class

Table shows the overall effect sizes of CLS on outcomes, combining the Biology and Chemistry courses into one sample.

Table 8a: Effect sizes of CLS intervention on outcomes

Outcome	Range	Sample standard deviation	2012 sample mean (SD)	2011 sample mean (SD)	Effect size Cohen's f
PASS	0-1	.45	66.27 (.47)	.72 (.45)	--
POINTS	0-692	236.45	286.74 (241.97)	208.27 (223.56)	.22
PART	0-40	12.95	18.64(12.96)	14.98 (12.51)	.25
PERSIST	0-1	.29	.93 (.26)	.90 (.30)	.04

The following models, comparing the same course, taught by the same instructor in 2011 to the course using Classroom Salon in 2012, indicate very small effect sizes.

Table 8b: Effect sizes of CLS intervention on Biology outcomes
(NGLC sample n=111, comparison sample n=420)

Outcome	Range	Sample standard deviation	2012 sample mean (SD)	2011 sample mean (SD)	Effect size Cohen's f
PASS	0-1	.70	.64 (.48)	.72 (.45)	.05
POINTS	1-100	20.71	65.44 (18.72)	67.43 (21.54)	--
PART	0-12	2.81	8.72 (2.8)	7.60(2.77)	.16
PERSIST	0-1	.30	91.89 (.27)	.90 (.30)	--

Table 8c: Effect sizes of CLS intervention on Chemistry outcomes
(NGLC sample n=178, comparison sample n=197)

Outcome	Range	Sample standard deviation	2012 sample mean (SD)	2011 sample mean (SD)	Effect size Cohen's f
PASS	0-1	.73	.74 (.44)	.72 (.42)	--
POINTS	0-727	142.18	509 (.130.68)	508.56 (151.46)	--
PART	0-40	10.26	29.57 (9.94)	30.74 (10.46)	.02
PERSIST	0-1	.28	.93 (.23)	.89 (.331)	.08

The following models are of the combined samples for each class. The dummy variable INTERV is coded 0 for the 2011 control group and 1 for the 2012 intervention group. A significant coefficient for the INTERV variable indicates significant difference between the two groups over and above the effect of the other covariates.

The multivariate Tables 9 and 10 show no difference between the CLS and control groups predicting total points and pass rate in the Chemistry course. Tables 11 and 12 show significant differences between the CLS and control groups in the Biology course. Mean points for the 2012 intervention cohort is lower than the mean points of the 2011 cohort. However, controlling for that difference, CLS did increase points earned in the intervention group and showed the same pattern in the model testing probability of passing.

For the Chemistry course, the only significant predictor of (log) points is participation. There is not a significant difference in points between the intervention and control group and Classroom Salon intervention is not significant (Adj R-squared= .47, F (4, 362) 82.87, p=.00).

Table 9:
Predicting points for Chemistry course – comparison of intervention and control

	Model 1				Model 2: Classroom Salon added			
	Coef.	Std. Err.	t	P>t	Coef.	Std. Err.	t	P>t
HSGPA	-0.02	0.02	-0.80	0.42	-0.02	0.02	-0.85	0.39
PART	0.03	0.00	18.13	0.00	0.03	0.00	18.10	0.00
INTERV	0.04	0.03	1.25	0.21	0.01	0.04	0.15	0.88
CLS					0.01	0.01	0.99	0.32
_cons	5.33	0.08	64.77	0.00	5.32	0.08	64.68	0.00

Classroom Salon is not a significant predictor of passing the Chemistry course (n = 372, Pseudo R2=.38, LR Chi2 (6) = 165.70, p=.00).

Table 10:
Predicting probability of passing Chemistry – comparison of intervention and control

	Odds Ratio	Std. Err.	z	P>z	Odds Ratio	Std. Err.	z	P>z
WHITE	2.30	0.77	2.48	0.01	2.29	0.76	2.47	0.01
AGE	1.10	0.06	1.81	0.07	1.11	0.06	1.83	0.07
GENDER	.72	.23	-1.04	.30	.73	.24	-.97	.33
HSGPA	1.84	0.50	2.25	0.02	1.86	0.51	2.27	0.02
PART	1.21	0.03	8.66	0.00	1.21	0.03	8.64	0.00
INTERV	1.78	0.57	1.80	0.07	1.94	0.93	1.46	0.12
CLS					0.96	0.12	-0.32	0.75

In the Biology course, the mean for points in the 2012 cohort is slightly lower than the mean of the 2011 cohort, which is not explained by classroom participation, high school GPA and the Classroom Salon intervention. However, addition of Classroom Salon to the model suggests that the 2012 cohort would have been worse off without it, although it does not add power to the overall model or explain the difference between the two cohorts. (Adj R-squared = 0.27, F (4, 420) = 39.98, p = .00)

Table 11: Predicting points for Biology course – comparison of intervention and control								
	Model 1				Model 2: Classroom Salon added			
LOGPOINT	Coef.	SE	t	P>t	Coef.	SE	t	P>t
HSGPA	0.06	0.03	2.14	0.03	0.06	0.03	1.94	0.05
PART	0.09	0.01	11.42	0.00	0.09	0.01	11.09	0.00
INTERV	-0.15	0.04	-3.38	0.00	-0.26	0.06	-4.08	0.00
CLS					0.07	0.03	2.41	0.02
_cons	3.31	0.10	31.92	0.00	3.35	0.10	32.10	0.00

In the Biology class, the intervention is a significant predictor of passing the class. The effect of Classroom Salon is significant over and above the differences between the groups. While gender, race and age are not significant predictors of points earned in either the Chemistry or Biology class, they do become significant in predicting pass rates. White students are over four times more likely to pass Biology and twice as likely to pass Chemistry than non-whites are.

Table 12: Predicting probability of passing Biology – comparison of intervention and control								
	Model 1				Model 2: Classroom Salon added			
	Odds Ratio	Std. Err.	z	P>z	Odds Ratio	Std. Err.	z	P>z
WHITE	4.09	1.311	5.19	0.00	4.10	1.14	5.05	0.00
AGE	1.18	0.05	3.19	0.00	1.14	0.05	2.70	0.01
GENDER	.90	.25	-.38	.70	.84	.24	-.61	0.54
HSGPA	2.08	0.42	3.63	0.00	1.93	0.39	3.23	0.00
PART	1.87	0.15	7.77	0.00	1.81	0.12	8.63	0.00
INTERV	0.19	0.06	-5.19	0.00	0.04	0.02	-6.44	0.00
CLS					2.87	0.81	3.72	0.00

Discussion

The impact of Classroom Salon on student performance differs significantly between the two large science courses. The students enrolled in the two classes are comparable, with non-significant differences in mean high school GPA, age, race, first generation status. Although Biology has female student, these characteristics are ruled out as predicting this difference. Content matter and pedagogic practice are more likely to explain the different course outcomes. Further qualitative analysis of these practices are needed to investigate whether these are spurious differences or whether they inform best practices of integration of CLS into instruction of large science classes.

Classroom Salon is supported by this study as a tool to help instructors monitor student understanding and craft delivery of content. Its potential as a vehicle for developing higher order thinking skills and meta-cognition by students is also evident in this study, but not fully realized. Disaggregating measures of content knowledge and thinking skills in the Biology course suggests that, while CLS positively predicts both sources of points, there is a stronger relationship to quiz scores measuring content knowledge than to homework scores measuring thinking skills. Throughout the study, the instructors were grappling with techniques to use the tool to prompt deeper thinking and to engage students in social learning. However, realization of this potential was limited by large class sizes, CLS functionality, and the instructional design interventions put in place.

CLS was an addition to the toolkit for the instructors more than for the students. The fact that students from the top quartile of high school GPA used Classroom Salon more than the bottom three fourths suggests that students who know how to be "good students" are more compliant with Classroom Salon engagement. CLS was treated as just another requirement by many students that did not engage it as a way to learn. While the CLS developers expected that social media- like activities would engage students in a learning community similar to their virtual leisure communities, this leap did not occur in the large science classes.

Rarely does the introduction of a new technology stand alone in changing student outcomes. This study illustrates how discipline-driven pedagogies and expectations of student thinking, in concert with institutional culture are important contexts to the implementation of technology. The instructors in this trial adapted the CLS tools to serve the courses as delivered in the current institutional context. An important contribution of this work is a deeper understanding of how CLS can mediate the experience of a large lecture based course.

Recommendations

Summary of instructor recommendations

1) **Size of class**. Classroom Salon was not originally intended for large lecture classes, so this study tested implementation in this context. Introductory science classes involve learning new terminology and technical language, which can be intimidating to practice "publically" in a small group Salon. The Chemistry instructor found more student participation if the Salon was structured for the whole class rather than for the smaller discussion groups. The PI, and other research, suggests that allowing students to use avatars or pseudonym (linked behind the scenes to their registration), creates a social space for student to take more risks. The writing class is a counter example. The class size was smaller (24 students) and the instructor prompted reflective responses

to the text in CLS, including paragraphs discussing peer annotations. Although these students are also first year college students, they were able to engage this higher level of intellectual intimacy in the humanities class.

2) **Volume and quality of tags**. Instructors assigned quotas for tags and points to enforce use of the tagging tools while reading in CLS. In large classes the resultant thousands of tagged notations were overwhelming to students who did not bother to read what other students noted, thereby limiting the value of peer interaction. *Both students and instructors noted that many tags were rote rather than a thoughtful use of the tool, indicating a low level of student engagement. A lack of substantive quality was further disincentive for students to read and learn from peers.* In the Fall term, instructors shifting toward prompting higher levels of thinking such as asking for examples from previous chapters or larger contexts, and offering one open ended tag ("Why I Tagged This") prompt instead of a pull down choice that could be automatically selected. Instructors observed that these strategies failed to deepen the quality of thinking of most students over the term.

3) **Ability to access useful formative data from the system.** Although the response from the CLS development team was always helpful, that status of the development of the overall project imposed some obstacles. Documentation was offered through videos and FAQs that were less efficient than a searchable, indexed users guide would be. Some functionality came online during the trial period, so were not implemented fully. Instructors had difficulty implementing timed and restricted student access to the system. *Most importantly, the inability to access real time statistical reports of discussion activity by student and methods of evaluating the quality of student notations curtailed the feedback loops critical to student learning.*

4) **Integration with classroom management system**. The Biology instructor noted that the classroom management system (D2L) allows better access to reports of discussion activity and functionality for restricting students' ability to copy from other students' comments. However, the writing instructor felt that CLS could well serve as the course hub, in place of D2L rather than a supplementary resource. CLS has been implemented as a class hub at CMU.

Evaluator recommendations

Further analysis of data collected for this trial, particularly qualitative analysis of discourse patterns and comparison with the CLS use of the Writing course, may produce more nuanced understanding of the best uses of CLS in these contexts.

Likewise, shifting the focus of introductory science courses from acquiring declarative knowledge to also developing analytic, synthetic, reflective and applied thinking through deeper reading of the text in the interactive environment offered by Classroom Salon may require pedagogic approaches

new to some instructors. The writing course had explicit learning objectives to improve critical reading skills and used class time to model and review the annotation discourse. Given that critical reading of the text is goals that the science instructors had for their students, one suggestion might be to explicitly build reading skill development into course delivery with the support of CLS.

Instructors need professional development to design student interaction that challenges levels of critical thinking and risking taking in community. Facilitating on line discourse among student learning communities is a specific skill set that should be developed along with the technical implementation of CLS. Facilitation models from the social media community, such as the use of avatars, can also be incorporated into this new pedagogy.

As implemented in the Biology course, Classroom Salon had more impact on quizzes scores that measure declarative knowledge then on case study points that reflect higher order thinking. Interestingly, there is an interaction with race on this point in which non-white students perform significantly lower than whites on quizzes but equal to whites in case studies. This interaction is not accounted for by differential use of Classroom Salon by different racial/ethnic groups. However, this insight warrants further investigation by the instructor about administration and use of quizzes especially as this discrepancy may explain the higher pass rate of white students in the Biology class that is not found in the Chemistry class.

Further inquiry and theoretical development should be pursued regarding the ideas of using social media to engage students. In the survey, most students complained that CLS was just extra work. The instructors and project PIs attribute that to general negativity from students at being asked to perform. However, one of the premises of CLS is that intellectual work should be engaging and have intrinsic value that supports persistence. If the problem is student negativity and disengagement, CLS may be part of the solution but is obviously not the only part.

Data feedback from the system need to be easily available to instructors for formative assessment and individual student level intervention. Searchable documentation of how to implement functionality should be developed.

More radical recommendations would be to redesign delivery of important gateway courses so that they can more effectively utilize the culture changes suggested by the design of CLS and by student experiences in the smaller writing course

Appendix A- Descriptive statistics of data in 2012 sample

		Chemistry n= 179 Mean (SD) range	Biology n= 111 Mean (SD) range
CLS	Classroom Salon use	2.63 (1.81) 0-5	1.67 (1.32) 0-4.7
PART	Class participation excluding Classroom Salon engagement	29.57 (9.94) 0-40	8.72 (2.8) 0-10
POINTS	Points for coursework	509 (130.68) 44.5-691.35	65.44 (18.72) 0-88.41
Logpoint	Log of points for course work to correct for distribution. Drops cases where points =0.	(n=178) 6.18 (.38) 3.80-6.53	(n=109) 4.14 (.46) .62-4.48
PF	Pass rate coded 1 if grade is C or above	.74 (.44) 0-1	.64 (.48) 0-1
PERSIST	Registered for following Spring term	.94 (.23) 0-1	.92 (.27) 0-1
HSGPA	High school Grade Point Average	3.00 (.78) 0-4	3.12 (.55) 0-3.10
GENDER	Gender coded 1 for female, 0 for male.	.48 (.50) 0-1	.71 (.46) 0-1
WHITE	Race coded 1 for white 0 for non-white	.68 (.46) 0-1	.891 (.39) 0-1
FIRSTGEN	First person in family to attend college. Coded 1 for yes, 0 for no	.44 (.49) 0-1	.45 (.50) 0-1
AGE	Given age at beginning of class	20.1 (4.19) 17-44	20.12 (2.85) 18-35

Counts of 2012 sample				
	All	**Chemistry**	**Biology**	**Writing**
Total n	312	178	111	23
Female	176	85	79	12
White	228	122	90	16
First generation	143	79	50	14
Passed class	220	132	71	17
Register Spring	312	168	102	20

Appendix B– analysis of sample bias

Fall 2012 Sample

	Chemistry	Biology
Class roster	215	206
Classroom Salon data	209 (61 Classroom Salon=0)	206 (22 Classroom Salon=0)
Consents	198	144
Administrative data (demog)	193	144
Administrative data (hsgpa)*	178	111
Realized analytic sample	178	111

* Other measures of ability, such as ACT scores were dropped to retain sample

Sample bias on demographic variables						
	Chemistry			Biology		
	Mean dropped	Mean in	T, p	Mean dropped	Mean in	T, p
Age	23	21	ns	27	20	5.23, p=.00
First generation	20%	44%	ns	0%	45%	5.47, p=.02
Gender	67%	48%	ns	82%	71%	Ns
White	60%	69%	ns	57%	81%	ns

Sample bias on outcome variables						
	Chemistry			Biology		
	Mean dropped	Mean in	t, p	Mean dropped	Mean in	t, p
Class points	496	509	ns	55.57	64.44	-3.0 , p= ,00
Classroom Salon engagement	2.35	2.64	ns	1.28	1.67	-2.09, p =.03
Classroom participation	25.61	29.57	-1.98, p=.04	7.47	8.72	-2.66, p = .00
Pass	71%	74%	ns	46%	54%	ns

Fall 2011 Comparison group sample

	Chemistry	Biology
Administrative data (demog)	197	420
Administrative data (course outcomes)	197	420
Administrative data (hsgpa)*	194	406

Comparability of intervention and comparison groups

Chemistry

	Mean 2011 (n=194)	Mean 2012 (n=178)	Diff not =0
Hsgpa	3.00	3.00	ns
Classroom participation	30.70	29.57	ns
Points	507.88	508.99	ns
Pass rate	71.65%	74.16%	ns

Biology

	Mean 2011 (n=406)	Mean 2012 (n=111)	Diff not=0
Hsgpa	3.08	3.12	ns
Classroom participation	7.56	8.73	T=-3.90, p=.00
Points	67.34	65.44	ns
Pass rate	71%	64%	ns

Appendix C: Implementation and context for each of the three classes in the trial

These narratives were provided by the instructors and edited by the evaluator.

Case 1: Classroom Salon was implemented in Chemistry 100 with enrollment of 215 students in Fall 2012.

Course overview

Chem. 100 is a preparatory Chemistry class for students with no or very little previous instruction in Chemistry. We cover basic concepts without exceptions (matter and its composition and properties, atomic theory, ions, light and energy, electron configuration, periodic trends, ionic and covalent compounds, nomenclature, molecular structure, polarity, intermolecular forces, chemical reactions, mole calculations, solutions, stoichiometry, gases)

A variety of students are taking this class: pre-med, pre-vet, pre-pharm, pre-dent, kinesiology, nursing, psychology, education, bio-science, conservation science, secondary education, arts (music, dance, theater), engineering (mechanical, electrical, civil, industrial) architecture, business and finance, criminal justice, language students.

Chem. 100 uses a textbook (from which also the reading assignments are taken), online homework, the "Lecture Exercises", a workbook - divided into 32 lessons) designed by the instructor to present practice problems. She discusses some problems in class and assigns practice problems for the students afterwards, the answers are always posted after each completed lesson.

Chem. 100 is taught in three 50-minute lectures and one 50-minute discussion section per week per student (11 discussion sections). During the first 10-15 minutes of class the instructor assigned clicker questions about concepts that had been discussed in the previous lecture. Students can work with partners or alone solving those problems. As often as possible I try to engage the students in partnered/group problem solving activities, students are also being encouraged to voice their opinion and questions in class and be an active part when it comes to designing "concept maps" for more challenging problems.

Teaching assistants (TAs) teach the discussion sections. They discuss and return the quiz the student took in the previous week (every Friday) first, and then work with the students through a worksheet to practice concepts that have been discussed in lecture. The TAs give examples on the board and then encourage independent work alone or with a partner, solutions are discussed on the board. TAs also addressed content given in Classroom Salon, especially if we discovered misconceptions or misleading student comments. Each TA also checked their students' comments in Classroom Salon for attendance and content. Any unusual findings were discussed in our weekly meetings. We have a tutoring center in our department for 100 level classes where graduate students

tutor students 4 days a week (8am-4pm), no appointment necessary. Usually Chem. 100 students feel most comfortable with their TAs so they try to visit the tutoring center when their TA is "on duty" or go to the TA's office hour.

Use of Classroom Salon

The instructor's main goal using Classroom Salon was to:

- Make the students read the textbook chapters and be prepared for lecture. Instruction time is very limited in class and many concepts have to be covered. Especially in large classes like Chem. 100, a well-prepared student has much better chances to succeed.
- I also wanted to explore the comments and tags in the reading assignments to identify problems and misconceptions to be able to address those in class.
- I also would have liked to see more communication between the students without instructor intervention.

In the Spring, pilot salons were set up for each of 11 discussion sections. The instructor assigned a new reading assignment every Friday using Classroom Salon. The students were supposed to read a section from a textbook chapter and respond to 2 or 3 posted questions. The answers were supposed to be supported by "breadcrumbs" (highlighted text). In addition she asked the students to either mark phrases or sentences in the text and make comments and /or use the tags given (general, needs clarification, I find this helpful, I would like to know more).

The instructor and TAs checked the responses and highlighted sections weekly using the CLS dashboard. The student grade was based on participation, not on the quality of the responses, comments, or annotations.

This strategy was revised for the Fall. Salons divided by small discussion sections did not offer enough critical mass to encourage student participation and were time intensive to manage. In the Fall, all 215 students were in the same salon and participation increased. More training and orientation was offered to TAs and to students. The instructor addressed Classroom Salon in class, demonstrated its use and gave students examples of quality comments. The TAs and instructor met weekly to evaluate student annotations and identify misconceptions that need to be addressed in class and /or discussion.

The instructor edited the uploaded documents for student reading and placed questions in the text instead of separately. Students commented on the questions in the same way they commented on the remaining text using tags. The questions were worded differently to not check facts but to encourage their thinking.

Case 2: First semester of a 2-semester Anatomy and Physiology sequence. 200 students enrolled in Classroom Salon section.

Course overview

The first semester of a 2-semester Anatomy and Physiology sequence is a foundation course for students in nursing, health sciences (athletic training, physical and occupational therapy, communications disorders, radiology, and forensic studies), education (speech and language majors, and some special education programs), psychology (for students in neurosciences), and pre-professional programs (medicine, chiropractic, dentistry, pharmacy). It is also recommended for students in secondary education, fine and performing arts (dance, animation, sculpture, and painting).

The TAs serve as laboratory instructors; they collaborate on hands-on assignments and prepare laboratory learning assessments (including exams, quizzes, homework) under the guidance of the course instructor and a lab instruction coordinator. They also supervise and guide students through 3 case studies that involve higher-order engagement of course material and objectives; they grade these using a rubric supplied by the course instructor. There is usually 1 TA per 48 students enrolled, with 2 additional appointments: 1 to maintain the grade book and down/upload of grades, graded files, and other aspects of course management, and 1 to coordinate lab instruction and mentor new TAs. We had one additional TA this semester assigned to managing Salon data and their assessment.

The course is divided into several components that interrelate. There are 2 "lecture" sections per week for 75 minutes each; these consist of (a) review of key concepts; (b) in-class questions using a student response system that assess descriptive/declarative knowledge and others that ask students to apply that knowledge and make inferences from it to solve a problem---sometimes including calculations and interpretations of graphs and charts; (c) both individual and group questions, the latter requiring collaboration and a single answer given by one student on behalf of the group; (d) follow-up material or examples in response to student concerns or questions (such as comments posted on the course website or in Salon or issues raised in the in-class chat room); (e) modeling solutions to course assignments, such as case studies and take-home assignments); and (f) important course announcements that are delivered via the student response system to verify students' understanding of these items.

Assessment in lecture is based on exams (1/6), a case study (1/6), 3 unit-specific take-home assignments (2/6), on-line review quizzes for each chapter in the text (1/6), and a combination of participation measures (salon, in-class participation, bonus exercises ... 1/6). The case studies, take-home assignments, and some in-class participation problems are eligible for collaboration in small groups (up to 4).

Students also attend one laboratory section per week for 2h50m. These are designed around hands-on activities with biologic and anatomic materials (both models and once-living specimens) and focused on building skills that help students meet the course objectives. Students complete three additional case studies relevant to basic themes in the course. The labs are divided into three units with a culminating examination at the end of each (approximately) four-week unit. All labs follow the same basic syllabus as to exam dates, exercises offered and so on, but there is some flexibility for individual TAs to apply and demonstrate their own specialties to help students perform better. There are additional study sessions for students to practice and review before each exam.

Students have the option of choosing a print or electronic text in the course bundle; lab manuals are print only. The case studies, take-home assignments, student-response system, chapter review quizzes, and pre-lab quizzes are all on line only. As a part of the course bundle, all students (who purchase the bundle) have electronic access to the text (and related animations) and the online virtual dissection materials. The two class exams are on-line; and, of course, Classroom Salon is on-line. There are also several links to websites and other resources used in demonstrations and as background for case studies, etc., as well as virtual labs that are used by some TAs as supplements to lab instruction. In fall 2012, we also used lecture capture and posted video of each lecture (barring the occasional technical difficulty) within a few hours after class. UWM has a program to provide technology access to students without it.

Use of Classroom Salon

The instructor has the following goals in mind for using Classroom Salon:

1. Increased use of the textbook by students as a basic resource for information, links, and supplements
2. Reflection on and engagement with textbook content
3. Highlighting parts of the text that caused problems for students so that "lecture" component would better align with student needs for these sessions.

Describe how you deployed Classroom Salon

The textbook was divided into sections, and each section was posted separately, open to the whole class for a period of 5 days ending the first day *after* the material was introduced on the syllabus. For each section, students were asked to highlight as they usually did when reading. For each item highlighted, a text box appeared with a comment or question to the effect "Why I tagged this" and students were expected to enter their rationale(s). For selected sections, there were also specific questions in the response tab that identified one essential or fundamental idea from the section, often related to concepts or material that students would need to know to complete their case studies or take-home assignments.

The instructor and TAs reviewed each section before the relevant lecture and identified parts of the text that had been tagged by more than 5-8 students. Usually, these items were developed as a part of the lecture presentation or problem set. Each item that appeared in the class presentation was tagged with the header "SALON" and most responses to questions or comments in Classroom Salon were addressed in that way. Students also had the use of a chat room that operated during the class to ask follow-up questions. On occasion, the instructor or the SI leader or one of the TAs would answer a specific student with a specific question individually, especially if that question did not related directly to the course objectives and assessments.

Our main concern was with the quality of the student response, so the data we extracted included both raw data (the text of student responses) AND a summary of the complexity of the comments. With 200 students and some 87 sets of comments (one set in each section of the text), we did not examine each individual response or comment, though we did choose some at random to compare the accuracy of the automated scoring. In the pre-test, we noticed that students would often write single-word comments that did not demonstrate any reflection on or engagement with the text. Examples were "interesting" or "definition of" or in some cases, simply repeating the information highlighted in the text.

In the Fall semester, we looked at the average and the maximum number of words per comment or response. Responses with more than 9 words received full marks; those with more than 20 received a bonus for that section. Students needed at least 5 words to receive partial credit. We hoped that students would improve their skills at using the text as they responded to the prompts for more reflective reading ... and that their responses (and scores) would improve as the course progressed. However, students did not seem to progress in their reflective reading skills. The trend over the weeks of the semester is slightly negative.

Classroom Salon worked very well to enhance the in-class experience. Often half or more of the comments were used as is in some aspect of the class, and in many cases materials prepared in advance for class related specifically to most of the other comments or questions raised by students. In most cases, the result was to modify the "lecture" to present different materials, form different questions, and (for the instructor) to do additional background research on the specifics of a student comment or question that extended the material beyond what was in the book.

The goals were the same for Spring and Fall, but we used the tagging and response portions of Classroom Salon differently in the Fall. We had hoped that following the specific directions for use of Classroom Salon in this class would entrain student behavior and change it in the direction of better engagement with and reflection on the course readings and related materials. In Spring, we used 4 specific tags that were supposed to indicate different aspects of engagement and reflection. We also required that students generate at least 5 tags per chapter (not per section of the text). We

hoped that students would show more sophisticated comments or an ability to generalize or ask questions beyond the text as the semester went along. Instead, students seemed to pick the tags at random and insert comments that were not specific to the prompt in the tag. We also did not ask specific questions in each section and require a response from students. In the Fall, we reduced the tags to a single prompt ("Why I Tagged This"), and added specific questions for most of the sections of the textbook. In both Spring and Fall, the use of the students' comments in Salon during "lecture" presentations was the same. It would be good to show example questions for both Andrew and Anja.

A significant problem was to have a functional program for extracting data that could be used for this sort of assessment. We had to go through several options, then test them with the data and the grade book, before we could develop a standard protocol for handling the responses. There simply is no easy way to get global data from Classroom Salon, and in the context of a large class with a lot of material to incorporate, handling the student comments as we would in a "social media" environment is not possible without having a specific individual assigned to that function. What we needed was a way to extract basic participation data. This had an impact in a couple of ways.

The most important was that it *delayed detailed feedback*; we used a couple of provisional measures starting about the 4th week of the semester, but we needed to revise the procedures several times to find a workable solution. This meant that students were not getting regular feedback in terms of the quality of their responses, so any learning curve we might have hoped for based on students' awareness of which textbook sections were getting the best scores could not be made available. Less important, perhaps, was a question of whether the annotations and responses really mattered, since *there did not appear to be any specific effect in the grade book from student performance* (or lack of it) until fairly late in the term. Of course, the students' comments and questions were addressed in class, so students knew that their comments were being read and considered, but those who were motivated (positively or negatively) by changes in the grade book, did not get this stimulus.

There was also a problem with controlling access to the material for comments or for reviewing comments by other students. Since the use of Classroom Salon in this class was time-sensitive, we needed the sections to open and close for commenting at certain times so we could use them in relevant class meetings, but we wanted them open for review at all times. Since it requires quite a bit of effort to extract and transform these data into a useful format, it would seem to be essential to our continuing use of this option that we could extract those data more easily and apply a formative assessment to them throughout the semester.

Case 3 English 101: Introduction to College Writing is part of UWM's First-Year Writing Program

Course overview

The course focuses on students producing effective critical interpretations of published, non-fiction essays and developing self-reflections of their writing processes (see attached goals). The class consists primarily of first-year students and has an enrollment cap of 24. Although teaching assistants frequently teach the course, there is no additional need for assistance outside of the lead instructor.

English 101 is a discussion-based course. Students read three published essays and are required to write three essays that correspond to each of the readings. Much of class time and out-of-class work is spent analyzing and responding to these readings as well as the interpretive stances made by members of the class. The students work to prepare a revised portfolio of three essays by the end of the semester: two interpretive and one reflective. Some portfolios (about 25% in total), specifically those assessed by the instructor as potentially failing or borderline and those randomly selected, are then evaluated by other English 101 instructors as part of a portfolio review process. If students fail at portfolio review, they fail the class; if their portfolios pass, they automatically pass the class, and for all students, the instructor then assigns a holistic grade based on the students' work on the portfolio and throughout the course.

The three primary readings, Kaplan's "The Gospel of Consumption," Junod's "The Falling Man," and Stein's "The '1984' Macintosh Ad," were available to students through Classroom Salon. Students were required to read the essays in Classroom Salon, though I also uploaded PDF versions of these texts to the LMS because some students occasionally had difficulty accessing the readings using the Classroom Salon tool. The only other text, a writing guide entitled *The DK Handbook*, was available in the bookstore and was used as a supplemental piece.

4. Describe the goals you had in mind for using Classroom Salon

For my course, the ability to monitor students' reading, annotating, and responding practices was invaluable to me. Several years ago in English 101, students were required to photocopy the notes that they took in the margins of their books and then bring them to class for submission. The practice was abandoned because of inefficiency, but Classroom Salon allows for a similar, yet refined, approach. As an instructor, I can see where students have focused attention or have had questions about the texts. Plus, students can interact with their classmates have focused. My primary goal in using Classroom Salon was to use student responses online to better facilitate face-to-face discussions.

Use of Classroom Salon

I uploaded the three main texts into Classroom Salon and asked students to read and respond in the Classroom Salon tool. Here is a sample of my prompt for "The Gospel of Consumption" reading:

> Read and annotate "The Gospel of Consumption" by Jeffrey Kaplan in Classroom Salon. You will need to log in using the account we created in class. If you have not created an account, you will need to sign up for a free account.
> Highlight the passages in the text that stand out to you as you read and provide a brief annotation for most, if not all, of your highlighted areas. In order to annotate the document, you'll need to click on "Participate Mode" from the drop-down navigation bar and be on the Annotate tab. As you annotate, please select one of the five tags (confusing, important, interesting, surprising, or other) from the drop-down menu just above where you type. Please view this video if you need help with this process, and also feel free to contact me in the Questions about the Course discussion forum.
>
> Answer the following questions in the Respond tab in the Kaplan document in Classroom Salon: What do you think Kaplan might have hoped readers would feel, think, or do while and after reading his essay? What is your overall reaction to Kaplan's essay? Please write at least two full paragraphs in your response to each question.

I also asked students to respond to what others had annotated in Classroom Salon. Here is a sample of the prompt I used for responses, which were typically due two days after the initial readings:

> Critically engage with the annotation comments of at least five of your classmates in Kaplan's "The Gospel of Consumption," which can be found here in Classroom Salon. In order to provide these comments, you'll need to click on "View Mode" from the drop-down navigation bar and be on the "Users" tab. When you click on a highlighted passage from the text, a box will pop up with your classmate's or classmates' responses. Please click on "reply to this comment," which is the double-arrow icon below the profile image. In your critical responses, provide 4-5 sentences for each reply, building upon, contesting, or questioning what your classmates' are saying. You cannot simply agree in your replies; you should expand upon their discussion to try to build a dialogue.
>
> Reply to at least two of your classmates' responses in "The Gospel of Consumption." In "View Mode," click on the "Responses" tab and read through all of the listed responses, then choose two to provide a follow-up discussion response. In your response posts, you might provide your classmates with new ideas that complement their understanding of the essay. You might challenge their responses. You might answer probing questions about their posts. Again, it will not be enough to simply agree with a posting or to just provide emotional support (though these may be part of a response). Finally, don't be afraid to respond to responses (not just initial posts). If you found the initial response useful to your understanding of the text, please click "Mark as useful."

In “View Mode,” I would find the places in the text with the greatest concentration of annotations. I would also sort by tags to identify areas that were confusing or elicited particular interest that could result in effective critical interpretation. With that information, I would develop in-class activities, which varied. For example, early on in the process, I asked students to go into Classroom Salon in class and identify student responses that were most effective, which helped us to determine what strategies might be best for annotating in Classroom Salon. For another reading, I copied eight passages from a reading that students had identified as particularly confusing, interesting, etc. and asked them in groups to both interpret the passages and contextualize them in terms of the larger essay as a way of identifying how they fit into the argument of a complex reading.

I do believe that my goals were met using Classroom Salon. The primary benefit of the tool for my course is the efficient identification of student responses to specific passages within texts. I could ask students to produce written responses that would identify places in the text where they were confused or had interest, but Classroom Salon allowed me to see, at a glance, a more holistic view of the students’ responses to better prepare me for in-class discussions. For their part, students felt that seeing how others responded helped them better understand the nuances of the texts.

If I were to use Classroom Salon in the future, I would definitely use the breadcrumbs feature to better connect student responses to specific passages within the text. Also, even though Classroom Salon was not designed to be an LMS, I think it could be more effective if all aspects of the class were to be conducted through Classroom Salon. Document distribution, annotations, online discussions, and peer review could all take place directly in Classroom Salon. The only challenges that come to mind would be assignment collection and grades, which would need to be confidential. However, I think that using Classroom Salon as more of a hub than a supplement would help justify the added support “cost” of the tool while allowing for a fuller utilization of its features.